

**PATENT**  
**IBM Docket No. RAL9-99-0062**

**Amendments to the Claims:**

1. (Cancelled)

2. (Cancelled)

3. (Cancelled)

4. (Original) A system for generating a digital impairment learning (DIL) signal, comprising:

means for organizing a plurality of symbols into a plurality of mutually exclusive symbol groups, each of the plurality of symbol groups being associated with a contiguous subset of the plurality of symbols; and

means for generating a sequence of symbols selected from the plurality of symbols such that adjacent symbols in the sequence are associated with different symbol groups of the plurality of symbol groups and the different symbol groups are separated by at most a maximum group spacing difference.

5. (Original) A system as recited in Claim 4, wherein the maximum group spacing difference is two.

**PATENT**  
**IBM Docket No. RAL9-99-0062**

6. (Original) A system as recited in Claim 4, wherein the means for generating the sequence comprises:

means for defining a symbol group sequence;

means for defining a symbol offset sequence that specifies sub-sequences within the sequence of symbols, each sub-sequence corresponding to symbols comprising one of the plurality of symbol groups; and

means for selecting each symbol in the sequence from the plurality of symbols in accordance with the symbol group sequence and from within each of the plurality of symbol groups in accordance with the symbol offset sequence.

7. (Original) A system as recited in Claim 6, wherein the symbol offset sequence is a pseudo-random sequence.

8. (Original) A system as recited in Claim 4, wherein the means for generating the sequence of symbols selected from the plurality of symbols comprises:

means for generating a sequence of symbols selected from a contiguous portion of the plurality of symbols such that adjacent symbols are associated with different symbol groups of the plurality of symbol groups and the different symbol groups are separated by at most two of the plurality of symbol groups.

**PATENT**  
**IBM Docket No. RAL9-99-0062**

9. (Original) A system for generating a digital impairment learning (DIL) signal, comprising:
  - means for organizing a plurality of ucodes into a plurality of uchords;
  - means for defining a uchord sequence;
  - means for defining a ucode offset sequence; and
  - means for generating a sequence of ucodes, each ucode in the sequence being selected from the plurality of ucodes in accordance with the uchord sequence and from within each of the plurality of uchords in accordance with the ucode offset sequence.
10. (Original) A system as recited in Claim 9, wherein the plurality of ucodes comprises 128 ucodes, the plurality of uchords comprises 8 uchords, each of the uchords being associated with 16 contiguous ucodes, and the uchord sequence is defined as 0, 2, 4, 6, 7, 5, 3, 1.
11. (Original) A system as recited in Claim 9, wherein the plurality of ucodes comprises 128 ucodes, the plurality of uchords comprises 8 uchords, each of the uchords being associated with 16 contiguous ucodes, and the ucode offset sequence is defined as 1, 4, 7, 10, 13, 0, 3, 6, 9, 12, 15, 2, 5, 8, 11, 14.
12. (Cancelled)
13. (Cancelled)
14. (Cancelled)

**PATENT**  
**IBM Docket No. RAL9-99-0062**

15. (Original) A method of generating a digital impairment learning (DIL) signal, comprising the steps of:

organizing a plurality of symbols into a plurality of mutually exclusive symbol groups, each of the plurality of symbol groups being associated with a contiguous subset of the plurality of symbols; and

generating a sequence of symbols selected from the plurality of symbols such that adjacent symbols in the sequence are associated with different symbol groups of the plurality of symbol groups and the different symbol groups are separated by at most a maximum group spacing difference.

16. (Original) A method as recited in Claim 15, wherein the maximum group spacing difference is two.

17. (Original) A method as recited in Claim 15, wherein the step of generating the sequence comprises the steps of:

defining a symbol group sequence;  
defining a symbol offset sequence that specifies sub-sequences within the sequence of symbols, each sub-sequence corresponding to symbols comprising one of the plurality of symbol groups; and

selecting each symbol in the sequence from the plurality of symbols in accordance with the symbol group sequence and from within each of the plurality of symbol groups in accordance with the symbol offset sequence.

18. (Original) A method as recited in Claim 17, wherein the symbol offset sequence is a pseudo-random sequence.

**PATENT**  
**IBM Docket No. RAL9-99-0062**

19. (Original) A method as recited in Claim 15, wherein the step of generating the sequence of symbols selected from the plurality of symbols comprises the step of:  
generating a sequence of symbols selected from a contiguous portion of the plurality of symbols such that adjacent symbols are associated with different symbol groups of the plurality of symbol groups and the different symbol groups are separated by at most two of the plurality of symbol groups.
20. (Original) A method of generating a digital impairment learning (DIL) signal, comprising the steps of:  
organizing a plurality of ucodes into a plurality of uchords;  
defining a uchord sequence;  
defining a ucode offset sequence; and  
generating a sequence of ucodes, each ucode in the sequence being selected from the plurality of ucodes in accordance with the uchord sequence and from within each of the plurality of uchords in accordance with the ucode offset sequence.
21. (Original) A method as recited in Claim 20, wherein the plurality of ucodes comprises 128 ucodes, the plurality of uchords comprises 8 uchords, each of the uchords being associated with 16 contiguous ucodes, and the uchord sequence is defined as 0, 2, 4, 6, 7, 5, 3, 1.
22. (Original) A method as recited in Claim 20, wherein the plurality of ucodes comprises 128 ucodes, the plurality of uchords comprises 8 uchords, each of the uchords being associated with 16 contiguous ucodes, and the ucode offset sequence is defined as 1, 4, 7, 10, 13, 0, 3, 6, 9, 12, 15, 2, 5, 8, 11, 14.
23. (Cancelled)
24. (Cancelled)

**PATENT**  
**IBM Docket No. RAL9-99-0062**

25. (Cancelled)

26. (Original) A computer program product for generating a digital impairment learning (DIL) signal, comprising:

    a computer readable storage medium having computer readable program code embodied therein, the computer readable program code comprising:

        computer readable program code for organizing a plurality of symbols into a plurality of mutually exclusive symbol groups, each of the plurality of symbol groups being associated with a contiguous subset of the plurality of symbols; and

        computer readable program code for generating a sequence of symbols selected from the plurality of symbols such that adjacent symbols in the sequence are associated with different symbol groups of the plurality of symbol groups and the different symbol groups are separated by at most a maximum group spacing difference.

27. (Original) A computer program product as recited in Claim 26, wherein the maximum group spacing difference is two.

28. (Original) A computer program product as recited in Claim 26, wherein the computer readable program code for generating the sequence comprises:

    computer readable program code for defining a symbol group sequence;

    computer readable program code for defining a symbol offset sequence that specifies sub-sequences within the sequence of symbols, each sub-sequence corresponding to symbols comprising one of the plurality of symbol groups; and

    computer readable program code for selecting each symbol in the sequence from the plurality of symbols in accordance with the symbol group sequence and from within each of the plurality of symbol groups in accordance with the symbol offset sequence.

**PATENT**  
**IBM Docket No. RAL9-99-0062**

29. (Original) A computer program product as recited in Claim 28, wherein the symbol offset sequence is a pseudo-random sequence.

30. (Original) A computer program product as recited in Claim 26, wherein the computer readable program code for generating the sequence of symbols selected from the plurality of symbols comprises:

computer readable program code for generating a sequence of symbols selected  
5 from a contiguous portion of the plurality of symbols such that adjacent symbols are  
associated with different symbol groups of the plurality of symbol groups and the  
different symbol groups are separated by at most two of the plurality of symbol groups.

31. (Original) A computer program product for generating a digital impairment learning (DIL) signal, comprising:

a computer readable storage medium having computer readable program code embodied therein, the computer readable program code comprising:

computer readable program code for organizing a plurality of ucodes into a plurality of uchords;

computer readable program code for defining a uchord sequence;

computer readable program code for defining a ucode offset sequence;

and

computer readable program code for generating a sequence of ucodes, each ucode in the sequence being selected from the plurality of ucodes in accordance with the uchord sequence and from within each of the plurality of uchords in accordance with the ucode offset sequence.

**PATENT**  
**IBM Docket No. RAL9-99-0062**

32. (Original) A computer program product as recited in Claim 31, wherein the plurality of ucodes comprises 128 ucodes, the plurality of uchords comprises 8 uchords, each of the uchords being associated with 16 contiguous ucodes, and the uchord sequence is defined as 0, 2, 4, 6, 7, 5, 3, 1.

33. (Original) A computer program product as recited in Claim 31, wherein the plurality of ucodes comprises 128 ucodes, the plurality of uchords comprises 8 uchords, each of the uchords being associated with 16 contiguous ucodes, and the ucode offset sequence is defined as 1, 4, 7, 10, 13, 0, 3, 6, 9, 12, 15, 2, 5, 8, 11, 14.

34-41. Cancelled.